IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

APPLICANT(s):	Pekka Ranta		
SERIAL NO.:	09/975,491	ART UNIT:	2662
FILING DATE:	10/10/2001	EXAMINER:	Cho, Hong Sol
TITLE:	METHOD AND ARRANGEMENT FOR IMPLEMENTING FAST SIGNALLING IN AN ASYMETRIC COMMUNICATION CONNECTION		
ATTORNEY DOCKET NO.:	297-010564-US(PAR)		

Board of Patent Appeals and Interferences
United States Patent and Trademark Office
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APPELLANT'S BRIEF

This is an appeal from the Final Rejection of the claims in the above-identified application. A Notice of Appeal was mailed on March 3, 2006.

I. REAL PARTY IN INTEREST

The real party in interest in this Appeal is: NOKIA MOBILE PHONES LTD. of Salo, Finland.

II. RELATED APPEALS AND INTERFERENCES

There are no directly related appeals or interferences regarding this application.

III. STATUS OF CLAIMS

Claims 1-19 are pending in the application.

Claims 10-12, 14-15 and 17-18 were objected to, as noted in the Office Action Summary of the Final Rejection, the basis for the objections being presented in the prior Office Action of June 13, 2005 (page 6) wherein the claims were objected to because of dependencies from a rejected base claim but were said to be allowable if rewritten in independent form. These claims are not being appealed since they are not rejected, and contain allowable subject matter.

Claims 1-9, 13, 16 and 19 have been finally rejected.

The claims on appeal are claims 1-9, 13, 16 and 19.

IV. STATUS OF AMENDMENTS

A response to the Final Rejection was filed without amendment of the claims, the response providing an argument showing patentability of the claims.

Thereafter, an Advisory action (dated February 21, 2006) issued, and stated that the rejections based on prior art are maintained.

V. SUMMARY OF CLAIMED SUBJECT MATTER

As noted on page 3 of the present specification, an object of the present invention is the provision of a method and an arrangement for implementing fast signalling in a communication connection with potentially asymmetric capacity requirements. This object of the invention is accomplished by defining a generally non-dedicated piece of transmission capacity at the radio interface as a fast signalling channel which is available for a relatively large number of devices that need to transmit fast signalling. Certain aspects of the invention are also accomplished by making such devices first check, whether the fast signalling needs could be fulfilled by using an existing dedicated channel, so that the non-dedicated fast signalling channel is only resorted to if an existing dedicated channel is not available.

The foregoing concept of the invention, namely, the use of a fast non-dedicated channel, is disclosed in claim 1, by way of example, wherein two of the steps of the method are directed to the allocating of pieces of communication capacity, as noted from the following two steps:

-allocating pieces of radio communication capacity from the arrangement of repeatedly occurring frames to dedicated communication channels, and

-allocating a piece of radio communication capacity from the arrangement of repeatedly occurring frames to a non-dedicated fast signalling channel.

In the practice of the invention, after the allocating of the communication capacity, there is a step of using communication capacity allocated to the non-dedicated fast signaling channel, as set forth at the end of the claim:

-using said piece of radio communication capacity allocated to a non-dedicated fast signalling channel for conveying fast signalling messages between at least one mobile station and the base station.

Corresponding subject matter appears in the independent claims 16 and 19 which provide apparatus for carrying forth the invention.

With reference also to the drawing figures, a transmitter 101 (Fig. 1) transmits a signal via two antennas 103 and 105 to a receiving antenna 106 (specification, paragraph linking pages 5-6). Fig. 2 presents a common fast signaling channel for the reverse direction (bottom two lines of page 6 of the specification) provided by one slot 221 of the signal frame. Other implementations of the fast signaling slot are presented in Fig. 3, and are described in the first full paragraph of Page 7. Use of a training sequence as a part of the structure of a fast signaling message is taught in the second full paragraph of Page 7 in conjunction with Fig. 4.

Illustration of the practice of the invention begins on Page 9, at line 13, wherein, at step 501 (shown in Fig. 5) there is detection of a need for fast signaling. First, there is a checking at step 502 as to whether there is already an available channel, in which case reuse of originally allocated capacity is accomplished at step 503. Otherwise, the station must resort to the use of a generally non-dedicated fast signalling channel, the corresponding slot of which is located at step 504. Eventually, resort is made to the non-dedicated channel at 507, as noted at lines 9-10 of Page 10.

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

The following grounds of rejection are treated in this appeal.

1. Whether Claims 1, 13, 16 and 19 should be rejected under 35 U.S.C. 103 as being unpatentable over Blanc (US 6661777) in view of Lodenius (US 5799091) for reasons set forth in Point 3 of the Final Office Action.

2. Whether Claims 2 and 5-9 should be rejected under 35 U.S.C. 103 as being unpatentable over Blanc in view of Lodenius in view of Schulz (US 6571101) for reasons set forth (beginning on Page 3) of the Final Office Action.

3. Whether Claims 3 and 4 should be rejected under 35 U.S.C. 103 as being unpatentable over Blanc in view of Lodenius, and further in view of Quick (US 5673259) for reasons set forth (on Page 5) the Final Office Action.

VII. ARGUMENT

In the Final Office Action, Claims 1, 13, 16 and 19 were rejected under 35 U.S.C. 103 as being unpatentable over Blanc (US 6661777) in view of Lodenius (US 5799091) for reasons set forth in the Action. Claims 2 and 5-9 were rejected under 35 U.S.C. 103 as being unpatentable over Blanc in view of Lodenius and Schulz (US 6571101), and claims 3 and 4 were rejected under 35 U.S.C. 103 as being unpatentable over Blanc in view of Lodenius and Quick (US 5673259) for reasons set forth in the Action.

The following argument is presented to overcome the grounds of rejection raised by the examiner, and to show the presence of allowable subject matter in the rejected claims.

ANALYSIS APPLICABLE TO ALL THREE GROUNDS OF REJECTION

The combined teachings of Blanc and Lodenius are used in the rejections of claims 1, 13, 16 and 19, with further combination with the teachings of Shulz and Quick being used for other ones of the rejected claims. It is noted that wording of the claims presented to the examiner was the same at the time of the Final Office Action and the previous Office Action. The two actions presented the same grounds of rejection.

For all of the rejected claims, the examiner relies on Blanc to teach a fast signaling channel for broadcasting information to packet users, including an arrangement of repeatedly occurring frames of communication capacity. The examiner admits that Blanc fails to disclose allocating communication capacity to a non-dedicated fast signaling channel. The examiner expresses the

opinion that Lodenius discloses a Fast Associated Control Channel (FACCH), as disclosed in col. 6 at lines 45-48. The examiner states that it would be obvious to modify Blanc to use the FACCH concept of Lodenius to allocate a non-dedicated fast signaling channel.

The examiner's attempted combination of the teachings of Blanc and Lodenius is challenged on the basis of the following arguments presented in the responses to the Final Rejection and the preceding Office Action.

Neither Blanc nor Lodenius, or the combination thereof discloses or suggests a non-dedicated fast signaling channel as set forth in the present claims. The present invention defines a non-dedicated fast signaling channel in the frame structure of a cellular radio system. The invention uses the capability allocated thereto to convey fast signaling between the base stations and mobile stations. In cellular networks, a channel is "non-dedicated" if it is not reserved for the sole use of a particular connection. An exclusively reserved channel is "dedicated".

Claim 1, and similarly for the other independent claims, recites in part, allocating a piece of radio communication capacity from the arrangement of repeatedly occurring frames to a non-dedicated fast signaling channel, and also recites using the piece of radio communication capacity allocated to a non-dedicated fast signaling channel for conveying fast signaling messages between at least one mobile station and the base station. Neither Blanc nor Lodenius suggest or disclose a non-dedicated fast signaling channel in the frame structure of a cellular radio system for use of the capacity allocated thereto

to convey fast signaling between the base stations and the mobile stations.

With respect to contesting the aforementioned combination of Blanc with Lodenius, it is observed that Lodenius discloses a single chip semiconductor device (100) for use in a GSM mobile station system. The system includes an external RF module (108) for transmitting and receiving radio signals. The semiconductor device (100) has a control-radio interface ("CRI") subsystem (104) (col. 4, lines 14-17). The CRI has a bus that allows communication with a radio transceiver ("RTX") subsystem (106) (col. 5, lines 29-35). The RTX provides !for the use of various traffic control channels including a fast associated control channel {"FACCH") (col. 6, lines 29-48).

It is noted that the FAACH is not a non-dedicated channel but rather a very dedicated signaling channel that steals its capacity from another very dedicated traffic channel. The FACCH appears in place of the traffic channel when lengthy signaling is required between a GSM mobile station and the network while the mobile station is in call. A channel like the FACCH of Lodenius does not become non-dedicated only because it does not have a fixed capacity allocation. Thus, Lodenius does not suggest or disclose a non-dedicated channel.

Neither Blanc nor Lodenius considered individually or in combination, suggest or disclose a non-dedicated channel, as called for by the present claims. Therefore, it would not be any motivation for a person skilled in the art to combine Blanc's teaching of dedicated communication channels with Lodenius' teaching of dedicated communication channels to obtain the subject matter of the present claims.

As noted above, the examiner states (Final Rejection on page 3 at lines 6-11) that Blanc fails to disclose the inventive feature of allocating a piece of radio communication capacity and utilizing said piece of radio communication capacity allocated to a non-dedicated fast signaling channel for conveying fast signaling messages. The examiner then relies on Lodenius (column 6 at lines 45-48) to disclose a FACCH channel that utilizes capacity from the traffic channels for fast signaling needs.

The cited passage from Lodenius states that a FACCH channel steals capacity from the traffic channels for fast signaling needs. This is the only material in Lodenius upon which the examiner relies. The matter of what constitutes a non-dedicated channel is set forth in the present specification (page 4 at lines 16-26) which teaches that a non-dedicated channel does not have limits as to who can access the channel.

The examiner, in part 4 of the Final Action, makes reference to a discussion of non-dedicated and dedicated channels from Applicant's previous response (page 9, lines 15-17), and refers to this discussion as a definition of the two types of channels.

The examiner then concludes that a FACCH channel could not be a dedicated channel since it steals capacity from the traffic channels for fast signaling needs.

It is urged, respectfully, that the examiner errs in that the referenced passage from Lodenius describes how the FACCH channel is established, namely, by borrowing capacity from some other channel (a traffic channel). The referenced passage does not describe how the FACCH channel is allocated to a signaling function. With reference to the aforementioned discussion of

what constitutes a non-dedicated channel, set forth in the present specification (page 4 at lines 16-26), it is noted that the specification teaches that a non-dedicated channel does not have limits as to who can access the channel.

Thus, the determination of whether a channel is to be regarded as a non-dedicated channel, is based on freedom of allocation and/or access to the channel. The determination is not based on how the channel is developed or established, such as by borrowing or stealing capacity from a traffic channel as taught by Lodenius.

Since the teaching in Lodenius, relied upon by the examiner, discusses development or construction of the channel, rather than allocation of the channel or access to the channel for the transmission of signaling commands, the combination of the teachings of Blanc with Lodenius fails to suggest the present invention and, furthermore, presents a situation where there can be no motivation to combine the two references.

Furthermore, the passage of Lodenius, cited by the examiner, should be read in the context of the entire paragraph (Lodenius, col. 6 at lines 29-48) which lists numerous types of channels, both traffic and control channels, that can be provided by the Lodenius RTX 106 device. One of the listed channels that can be provided by the Lodenius device is the FACCH channel, cited by the examiner.

Lodenius does not state whether the FACCH channel is a dedicated channel or a non-dedicated channel. The examiner's position, stated at the end of Point 4 (page 6 of the Action) is that a FACCH channel could not be a dedicated channel because it steals capacity from the traffic channels. The question is not how the

FACCH finds usable capacity, but whether it has a dedicated use for the capacity. Therefore, the examiner's position contradicts the foregoing logic. The examiner's position also contradicts the teaching of page 1 of the present specification, which states as follows. The FACCH (Fast Associated Control CHannel) means that a certain dedicated user data channel must exist before the definition of the control channel makes sense. The FACCH is a dedicated channel. The FACCH does not have a regularly occurring allocated radio resource: whenever an FACCH message needs to be sent, a burst or a part thereof is "stolen" from its original use of conveying user data and used to convey signaling information instead. Thus, the examiner's position is believed to be in error.

In fact, the examiner's position is in error also because, in the usual practice of construction of telephony systems, the FACCH channel is a dedicated channel as is evidenced by a listing of articles set forth in an Appendix previously submitted in the response to the Final Rejection.

FIRST GROUND OF WHETHER CLAIMS 1, 13, 16 AND 19 SHOULD BE REJECTED UNDER 35 U.S.C. 103 OVER BLANC (US 6661777) IN VIEW OF LODENIUS (US 5799091).

This ground of rejection is based on a combination of the teachings of the two references, Blanc and Lodenius. The combination of these two references is believed to be in error for the reasons set forth in the foregoing argument. Accordingly, it is urged that this ground of rejection has been overcome by the foregoing argument so as to provide allowable subject matter for the foregoing rejected claims.

SECOND GROUND OF WHETHER CLAIMS 2 AND 5-9 SHOULD BE REJECTED UNDER 35 U.S.C. 103 AS BEING UNPATENTABLE OVER BLANC IN VIEW OF LODENIUS IN VIEW OF SCHULZ (US 6571101).

In this rejection, the teaching of Schulz is added to the combination of the teachings of Blanc and Lodenius. It is urged that the attempted combination of Blanc and Lodenius must fail for the reasons advanced in the foregoing argument. Schultz is relied upon for the purpose of showing simultaneous access of a plurality of mobile stations to a signaling channel with respect to rejection of claim 2. Shultz is relied upon for the purpose of teaching how to distinguish between different signal sources with respect to rejections of claims 5-9. However, it is believed that these teachings of Shultz to not alter the aforementioned argument against the combination of Blanc with Lodenius. Accordingly, it is urged that this ground of rejection has been overcome by the foregoing argument so as to provide allowable subject matter for the foregoing rejected claims.

THIRD GROUND OF WHETHER CLAIMS 3 AND 4 SHOULD BE REJECTED UNDER 35 U.S.C. 103 AS BEING UNPATENTABLE OVER BLANC IN VIEW OF LODENIUS AND QUICK (US 5673259).

In this rejection, the teaching of Quick is added to the combination of the teachings of Blanc and Lodenius. It is urged that the attempted combination of Blanc and Lodenius must fail for the reasons advanced in the foregoing argument. Quick is relied upon for the purpose of showing se of a unique long code to transmit over an access channel. In the last sentence on page 5 of the Office Action, the examiner makes reference also to

Schulz, but Schulz is not mentioned otherwise as being a reference relied upon by the examiner in this ground of rejection. However, it appears that reliance on the teaching of Quick, with or without Schulz, does not alter the aforementioned argument against the combination of the teachings of Blanc with Lodenius. Accordingly, it is urged that this ground of rejection has been overcome by the foregoing argument so as to provide allowable subject matter for the foregoing rejected claims.

CONCLUSION

In the present application, various ones of the claims have been said by the examiner to contain allowable subject matter, upon being rewritten in independent form, and are not subject to this appeal. The remaining claims, which are the subject of this appeal, are rejected primarily on the basis that the examiner looks to Lodenius to teach some form of non-dedicated channel, so as to meet the claimed limitation of the non-dedicated fast signalling channel. The examiner believes that, in view of a comment presented in Lodenius about a stealing of capacity by a FACCH from traffic channels, one may conclude that FACCH is not dedicated. However, a similar comment about the stealing of channel capacity appears in the present specification, wherein the FACCH is understood to be a dedicated channel, just the reverse of the examiner's conclusion. Therefore, it is believed that the combination of references relied upon by the examiner fails to support the examiner's position.

Accordingly, it is urged that the arguments presented herein have overcome the grounds of rejection to show the presence of allowable subject matter in the rejected claims. It is requested

respectfully that the BOARD OF PATENT APPEALS AND INTERFERENCES reconsider the foregoing grounds of rejection under 35 U.S.C. 103, and find the present claims to be allowable.

The appendix of claims is attached hereto.

A check in the amount of $500.00 is enclosed herewith for the appeal brief fee. The Commissioner is hereby authorized to charge payment for any additional fees associated with this communication or credit any over payment to Deposit Account No. 16-1350.

Respectfully submitted,

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VIII. CLAIMS APPENDIX

The texts of the claims involved in the appeal are presented in the following listing of the claims. For the sake of convenience in having a complete listing of all the claims in this application, those claims which were not rejected and are not being appealed are also presented in the listing of the claims, but with an indication that they are not rejected and are not appealed.

1. A method for implementing fast signalling in a communication connection between a base station and a mobile station of a cellular radio network, comprising the steps of:

- defining an arrangement of repeatedly occurring frames that consist of pieces of allocatable radio communication capacity between the base station and mobile stations communicating therewith,

- allocating pieces of radio communication capacity from the arrangement of repeatedly occurring frames to dedicated communication channels,

- allocating a piece of radio communication capacity from the arrangement of repeatedly occurring frames to a non-dedicated fast signalling channel and

- using said piece of radio communication capacity allocated to a non-dedicated fast signalling channel for conveying fast signalling messages between at least one mobile station and the base station.

2. A method according to claim 1, wherein the step of allocating a piece of radio communication capacity from the arrangement of repeatedly occurring frames to a non-dedicated fast signalling channel comprises the step of allocating a piece of radio communication capacity from the arrangement of repeatedly occurring frames to a completely non-dedicated fast signalling channel, so that all mobile stations communicating with said base station are equally allowed to use said non-dedicated fast signalling channel.

3. A method according to claim 1, wherein the step of allocating a piece of radio communication capacity from the arrangement of repeatedly occurring frames to a non-dedicated fast signalling channel comprises the step of allocating a piece of radio communication capacity from the arrangement of repeatedly occurring frames to a virtually non-dedicated fast signalling channel, so that a well-defined subgroup of all mobile stations communicating with said base station are mutually equally allowed to use said non-dedicated fast signalling channel.

4. A method according to claim 3, comprising the step of announcing by the base station to a mobile station, into which subgroup of all mobile stations communicating with said base station the mobile station belongs.

5. A method according to claim 1, wherein the step of using said piece of radio communication capacity allocated to a non-dedicated fast signalling channel for conveying fast signalling

messages comprises the substep of using a multiple access arrangement to separate fast signalling transmissions relating to several mobile stations from each other.

6. A method according to claim 5, comprising the step of separating fast signalling transmissions relating to several mobile stations from each other through frequency division multiple access.

7. A method according to claim 5, comprising the step of separating fast signalling transmissions relating to several mobile stations from each other through time division multiple access.

8. A method according to claim 5, comprising the step of separating fast signalling transmissions relating to several mobile stations from each other through code division multiple access.

9. A method according to claim 5, comprising the step of separating fast signalling transmissions relating to several mobile stations from each other through a combination of at least two of frequency division multiple access, time division multiple access and code division multiple access.

10. (NOT REJECTED, AND NOT APPEALED) A method according to claim 1, wherein the step of using said piece of radio communication capacity allocated to a non-dedicated fast

signalling channel for conveying fast signalling messages comprises the substep of transmitting a fast signalling message where a training sequence is accompanied by at least one information symbol additional to the training sequence.

11. (NOT REJECTED, AND NOT APPEALED) A method according to claim 1, wherein the step of using said piece of radio communication capacity allocated to a non-dedicated fast signalling channel for conveying fast signalling messages comprises the substep of transmitting a fast signalling message where a training sequence is accompanied by at least information symbol that replaces a part of the training sequence.

12. (NOT REJECTED, AND NOT APPEALED) A method according to claim 1, wherein the step of using said piece of radio communication capacity allocated to a non-dedicated fast signalling channel for conveying fast signalling messages comprises the substep of transmitting a fast signalling message where a training sequence is selected from a number of alternative training sequences in order to convey a piece of information through the selection of a particular training sequence.

13. A method according to claim 1, comprising the steps of:

- allocating several differently located pieces of radio communication capacity from the arrangement of repeatedly occurring frames to non-dedicated fast signalling channels

in the communication direction from the mobile stations to the base station and

- allowing mobile stations to choose among said allocated pieces of radio communication capacity allocated to non-dedicated fast signalling channels in order to enable conveying fast signalling messages from the mobile stations to the base station in a way that is convenient to each mobile station.

14. (NOT REJECTED, AND NOT APPEALED) A method according to claim 1, comprising the steps of:

- examining, whether a part of an existing dedicated communication connection between the mobile station and the base station is available for conveying fast signalling messages between said mobile station and the base station and

- only if such a part of an existing dedicated communication connection between the mobile station and the base station is not found to be available for conveying fast signalling messages between said mobile station and the base station, implementing the step of using said piece of radio communication capacity allocated to a non-dedicated fast signalling channel for conveying fast signalling messages between said mobile station and the base station.

15. (NOT REJECTED, AND NOT APPEALED) A method according to claim 1, comprising the steps of:

- examining, whether a part of an existing dedicated communication connection between the mobile station and the base station is available for conveying fast signalling messages between said mobile station and the base station and

- only if such a part of an existing dedicated communication connection between the mobile station and the base station is not found to be available for conveying all required fast signalling messages between said mobile station and the base station, implementing the step of using said piece of radio communication capacity allocated to a non-dedicated fast signalling channel for conveying those fast signalling messages between said mobile station and the base station for which no part of an existing dedicated communication connection was found to be available.

16. A mobile station of a cellular radio network, comprising:

- means for setting up communication connections between it and base stations of the cellular radio network,

- means for observing an arrangement of repeatedly occurring frames that consist of pieces of allocatable radio communication capacity between the base station and mobile stations communicating therewith

- means for locating such a piece of radio communication capacity within the arrangement of repeatedly occurring frames which is allocated to a non-dedicated fast signalling channel and

- means for utilising said piece of radio communication capacity allocated to a non-dedicated fast signalling channel by transmitting or receiving fast signalling messages to or from said base station.

17. (NOT REJECTED, AND NOT APPEALED) A mobile station according to claim 16, comprising:

- means for examining, whether a part of an existing dedicated communication connection in the communication direction from the mobile station to the base station is available for conveying fast signalling messages from said mobile station to the base station and

- means for utilising such a part of an existing dedicated communication connection, if found to be available, by transmitting fast signalling messages to said base station, and only utilising said piece of radio communication capacity allocated to a non-dedicated fast signalling channel by transmitting fast signalling messages to said base station is no part of an existing dedicated communication connection was found to be available.

18. (NOT REJECTED, AND NOT APPEALED) A mobile station according to claim 16, comprising:

- means for examining, whether a part of an existing dedicated communication connection in the communication direction from the mobile station to the base station is available for conveying at least some fast signalling messages from said mobile station to the base station and

- means for utilising such a part of an existing dedicated communication connection, if found to be available, by transmitting fast signalling messages to said base station, and only utilising said piece of radio communication capacity allocated to a non-dedicated fast signalling channel by transmitting those fast signalling messages to said base station for which no part of an existing dedicated communication connection was found to be available.

19. A base station of a cellular radio network, comprising:

- means for setting up communication connections between it and mobile stations of the cellular radio network,

- means for setting up an arrangement of repeatedly occurring frames that consist of pieces of allocatable radio communication capacity between the base station and mobile stations communicating therewith,

- means for indicating such a piece of radio communication capacity within the arrangement of repeatedly occurring frames which is allocated to a non-dedicated fast signalling channel and

- means for utilising said piece of radio communication capacity allocated to a non-dedicated fast signalling channel by receiving or transmitting fast signalling messages from or to at least one mobile station.

IX. EVIDENCE APPENDIX

There is no evidence appendix.

X. RELATED PROCEEDINGS APPENDIX

There is no related proceedings appendix.